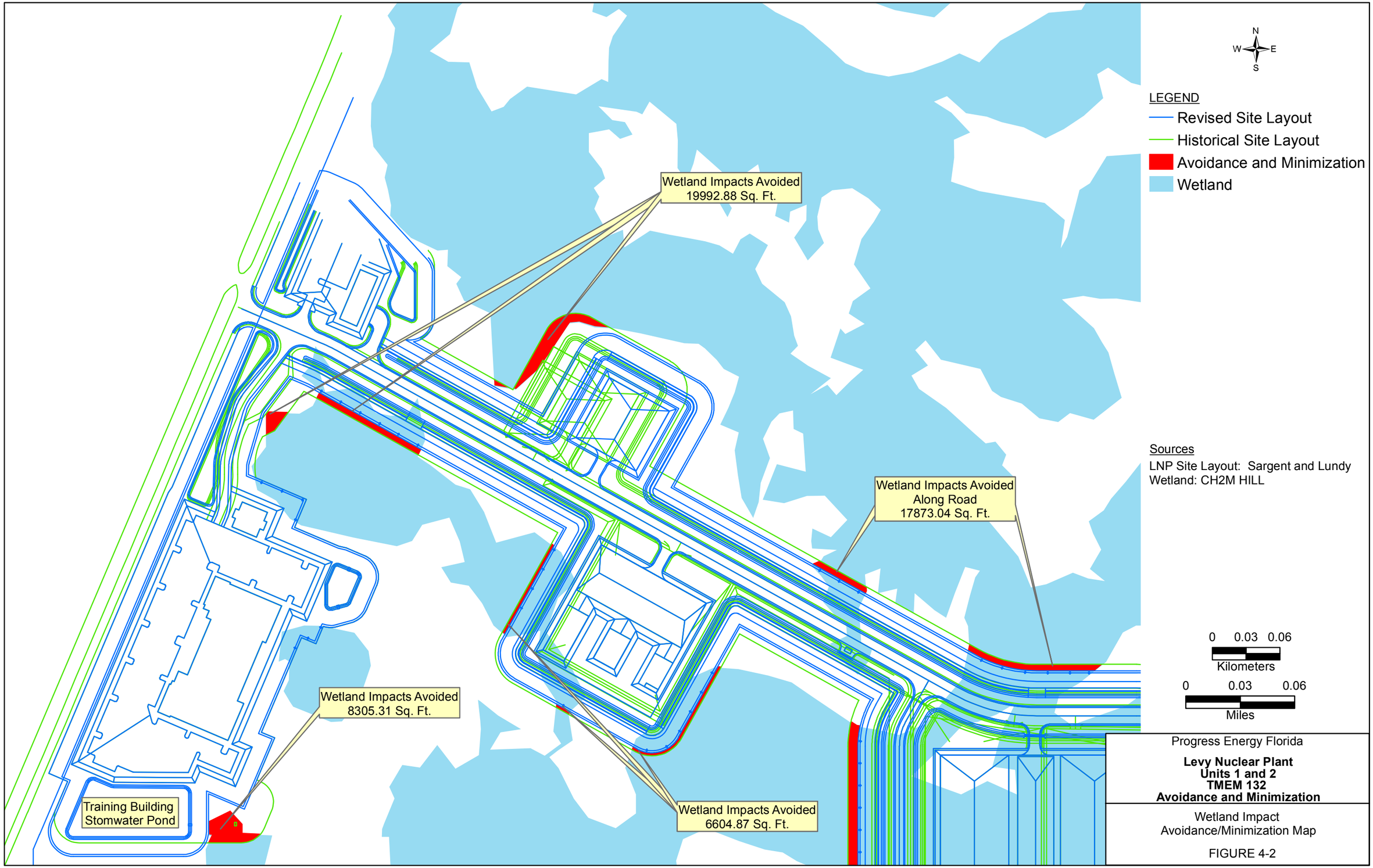

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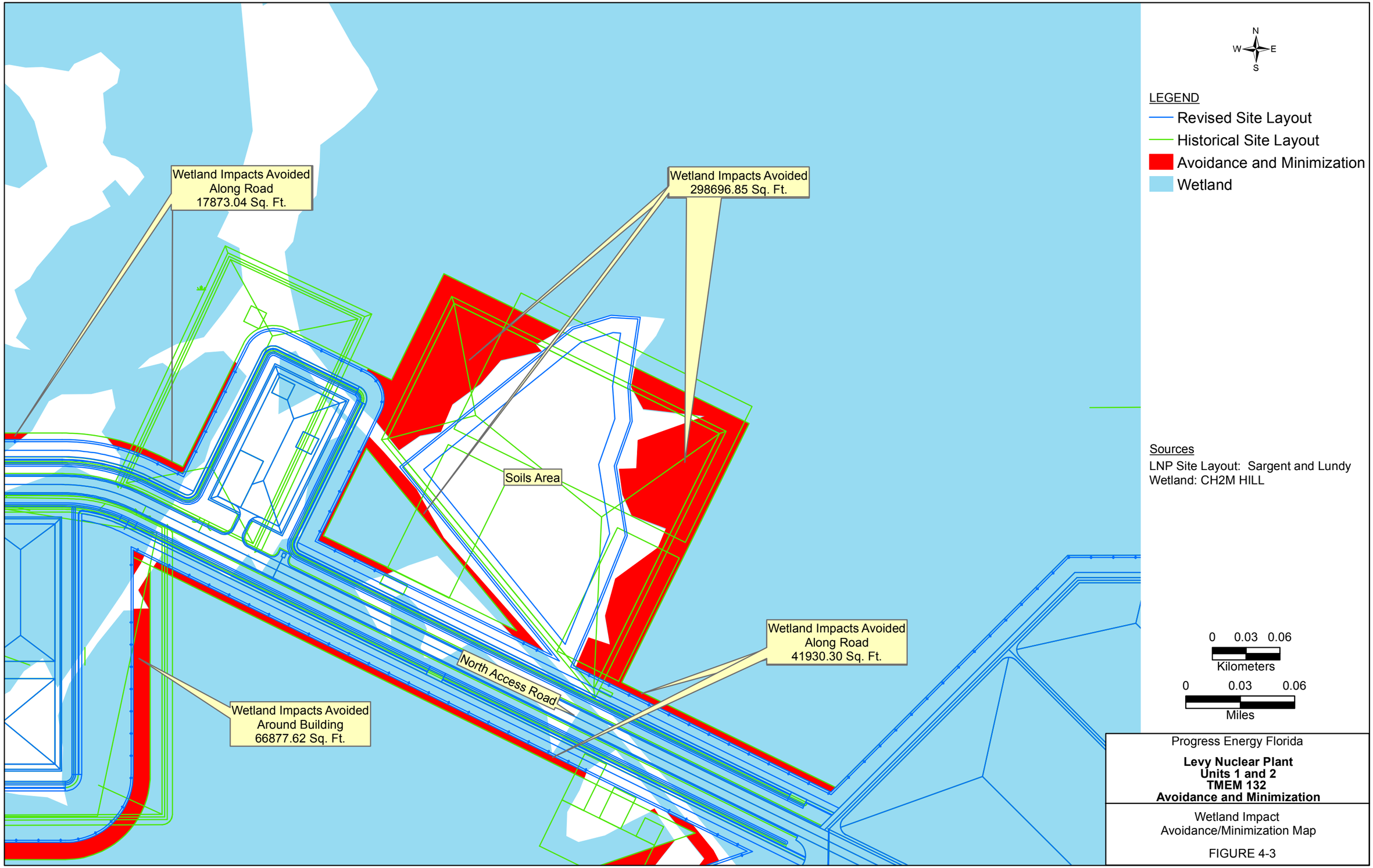

Progress Energy Florida

Levy Nuclear Plant
Units 1 and 2
TMEM 132
Avoidance and Minimization

Wetland Impact
Avoidance/Minimization Map

FIGURE 4-3

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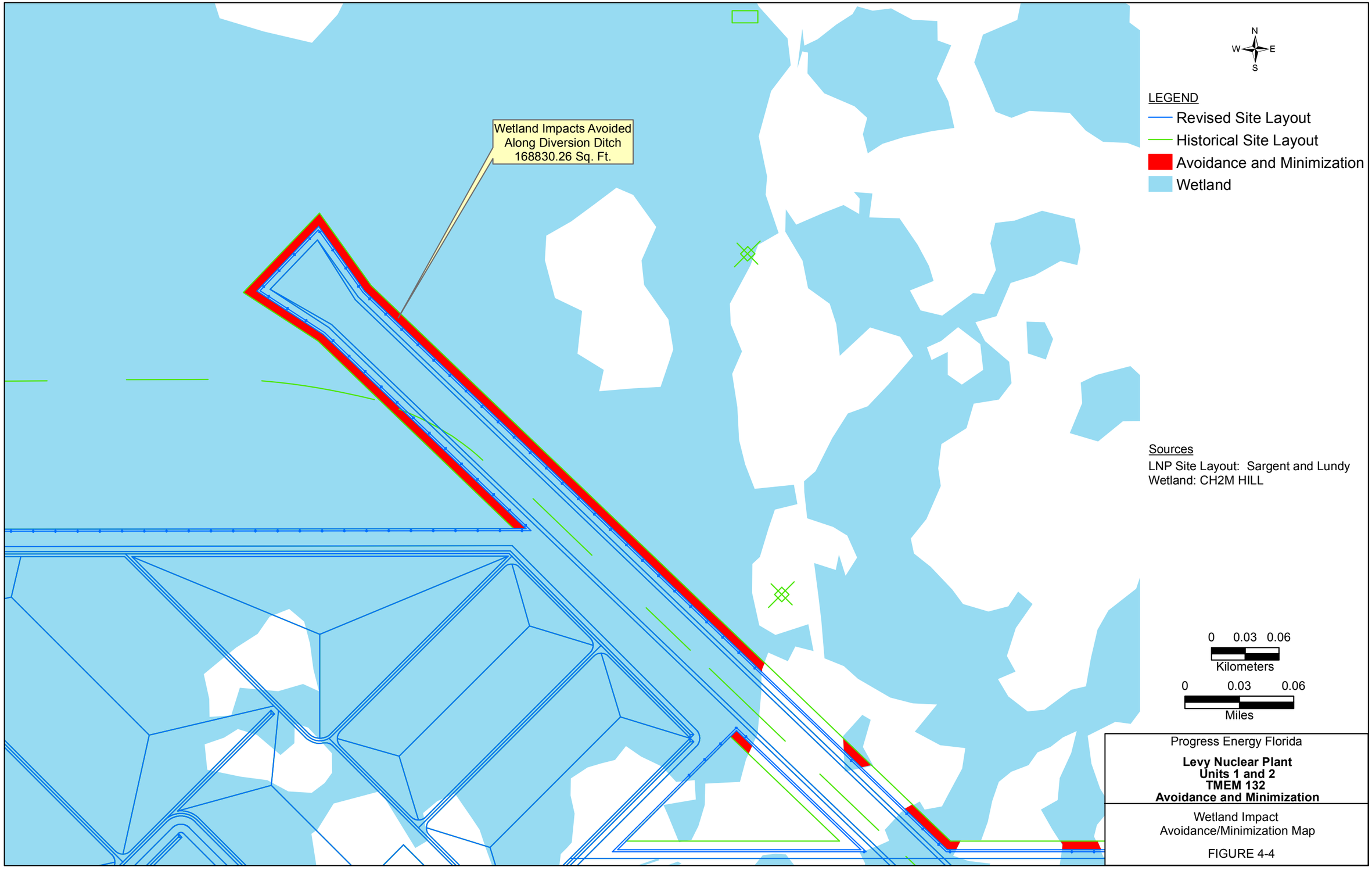

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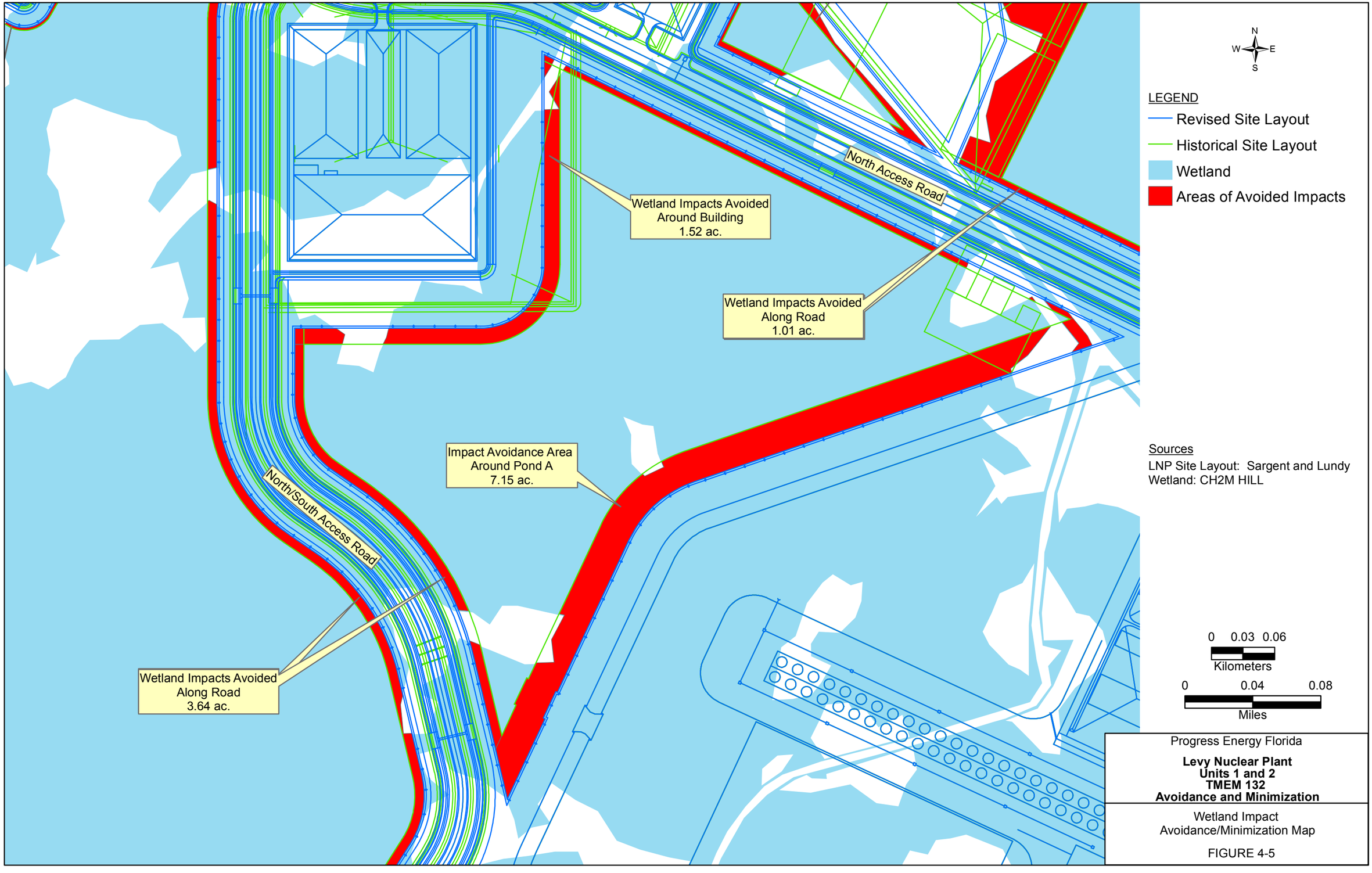
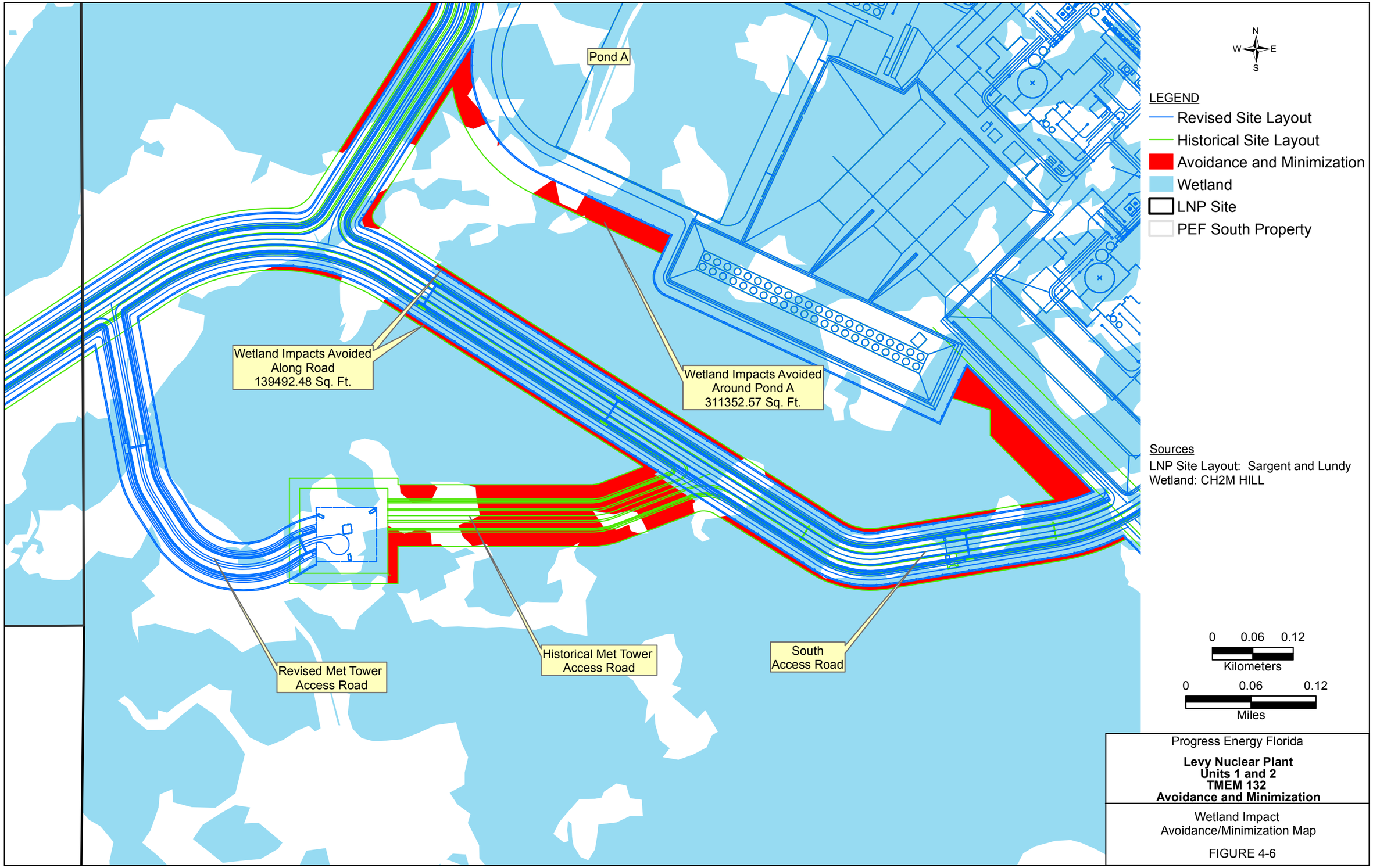


Progress Energy Florida

Levy Nuclear Plant
Units 1 and 2
TMEM 132
Avoidance and Minimization

Wetland Impact
Avoidance/Minimization Map

FIGURE 4-5



Progress Energy Florida

Levy Nuclear Plant
Units 1 and 2
TMEM 132
Avoidance and Minimization

Wetland Impact
Avoidance/Minimization Map

FIGURE 4-6

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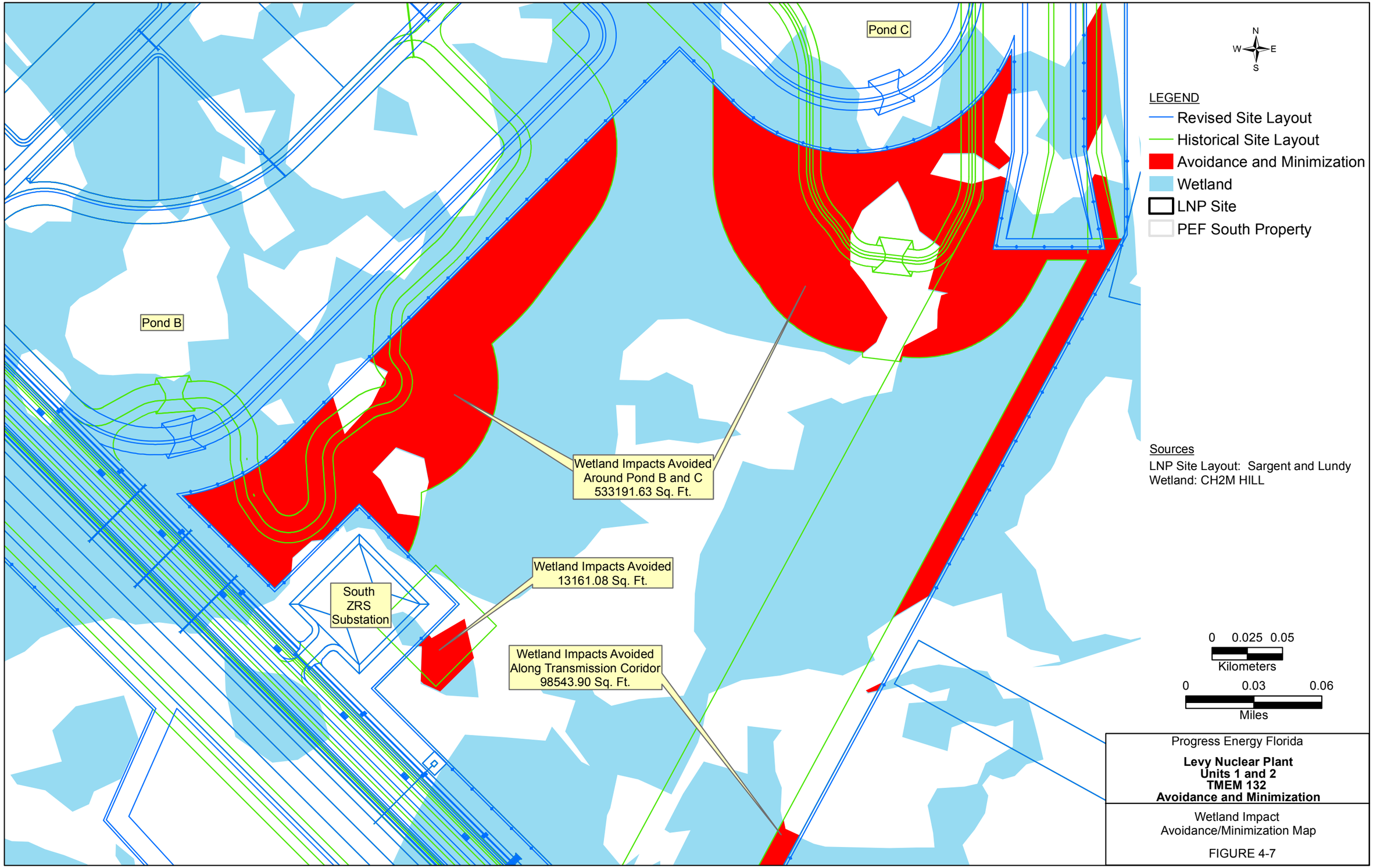

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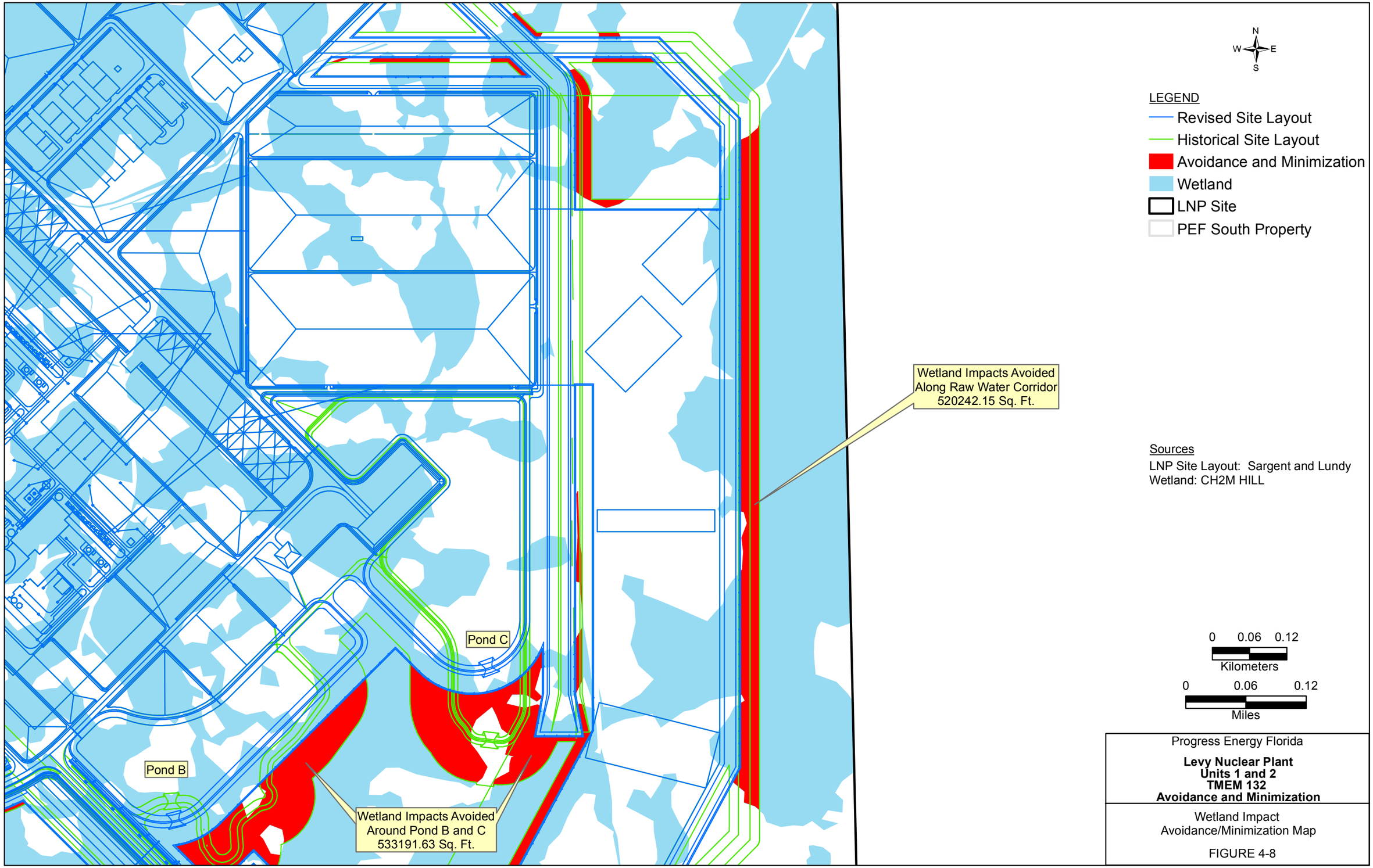

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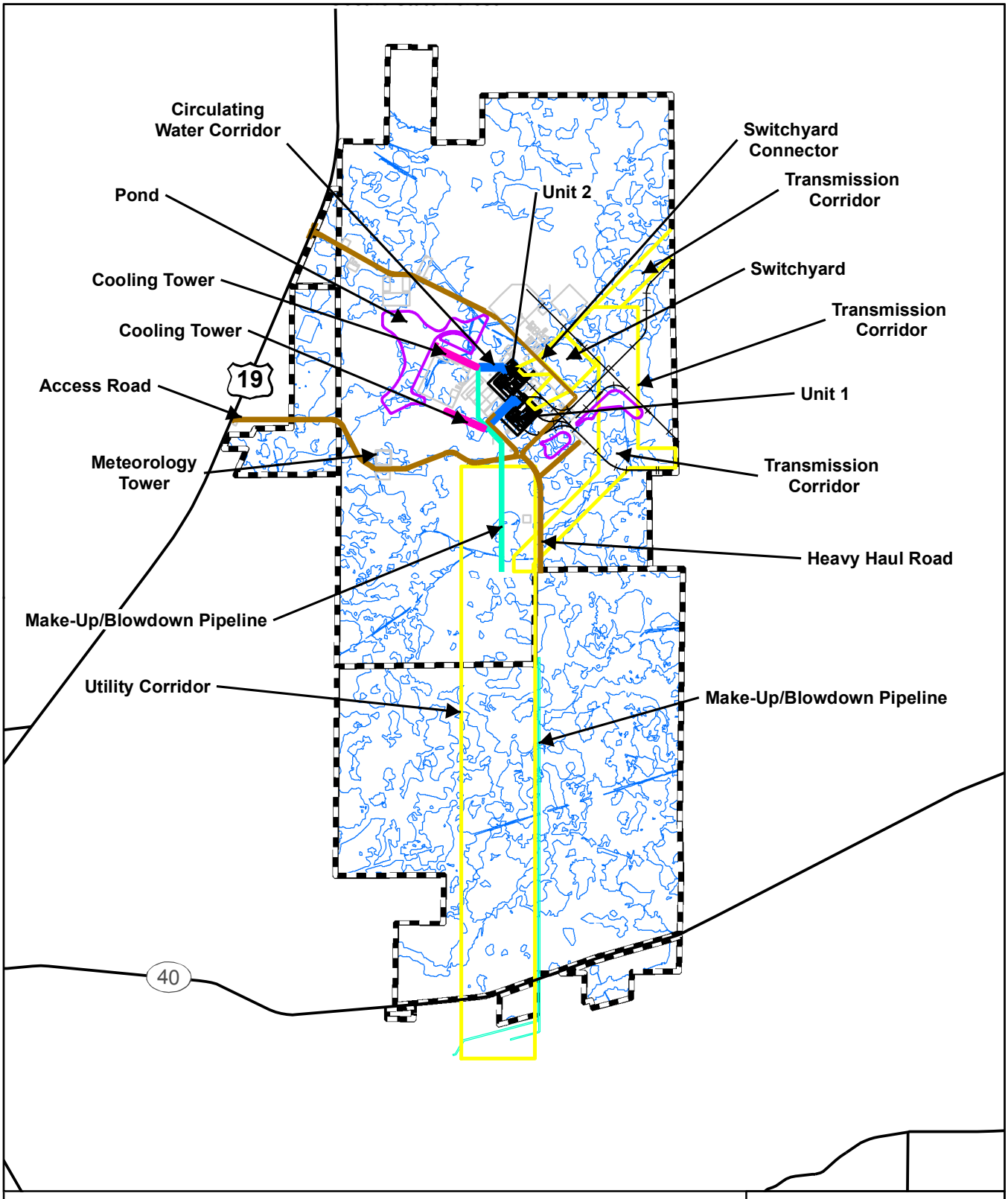

Progress Energy Florida
Levy Nuclear Plant
Units 1 and 2
TMEM 132
Avoidance & Minimization

Historical LNP
Site Layout and Components

FIGURE 4-9

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Four stormwater ponds (A, B, C, and D) were originally proposed to manage stormwater drainage, and to maintain or exceed historic floodplain storage on the LNP site. The ponds were designed based on the SWFWMD *Basis of Review*, *Part B*. Two of the ponds were combined and reconfigured to avoid wetlands. Pond D was reduced in size to avoid wetlands. The stormwater ponds are elevated and shallow, which reduces the potential for groundwater drawdown in adjacent wetlands.

Several other facilities were relocated or reconfigured to avoid and minimize impacts to wetlands. These include the north and south substations, spoils areas, parking and staging area.

4.1.4 Avoidance and Minimization Efforts During Construction

Best Management Practices (BMPs) will be developed as part of the Sedimentation and Erosion Control Plan, which is required by FDEP prior to construction of the LNP. BMP guidelines will be followed to reduce the potential for erosion and sedimentation to affect wetlands and other sensitive resources. Barriers, such as silt fences, will be used to prevent sediment from entering surface waters.

In addition to the BMPs that will be implemented to protect wetlands during construction, temporary impact areas will be restored in accordance with the Temporary Impact Restoration Plan currently in preparation. The Temporary Impact Restoration Plan is expected to be submitted to the USACE in late 2011.

The nuclear island for each unit consists of the containment vessel, shield building, and auxiliary building. Dewatering beneath the nuclear islands will be conducted using reinforced diaphragm walls that isolate the construction area so that only the interior of the excavation will require dewatering. In this way, groundwater drawdown outside the excavation is minimized and adjacent wetlands will not be affected. Construction methods for the nuclear islands are described in FSAR Subsection 2.5.

A hydrologic monitoring program will be implemented during construction activities to monitor dewatering impacts at the two nuclear island excavations. Construction dewatering for each of the nuclear units will take place over a period of approximately 2 years. Inflow and stormwater from within the excavations will be intermittently pumped for each nuclear island and discharged to an infiltration basin sized for the estimated flow rate (PEF, 2008a). These infiltration basins will be located in areas which will be permanently impacted by LNP construction. These actions are expected to prevent significant drawdowns from occurring in the surficial aquifer system surrounding the excavations that support hydrologically connected adjoining wetlands. No long-term changes to local groundwater levels are expected as a result of the dewatering, and groundwater is expected to return to pre-disturbance levels after dewatering ceases. PEF has committed to monitoring adjacent surface water and groundwater levels to ensure that dewatering impacts are minimized.

ER Chapter 4 addresses the potential effects of construction on the environment, and provides additional detail on proposed BMPs and other avoidance and minimization efforts during the construction phase.

4.2 Linear Facilities

This section addresses general avoidance and minimization measures associated with linear facilities for the LNP, except for the offsite transmission ROW. The transmission ROW south of CR 40 is addressed in a separate TMEM.

4.2.1 Avoidance and Minimization Measures During Design and Siting

Linear facilities for the LNP include the site access roads, makeup and blowdown pipelines, and transmission lines. Table 4-2 lists some of the avoidance and minimization measures associated with the linear facilities. Alternative routing analyses were conducted for each major linear facility. The individual lines were collocated on site to the extent possible, to reduce the total area of disturbance and minimize wetland impacts. In order to avoid an eagle's nest and a relatively high quality cypress wetland, the consolidated utility corridor was shifted to the east before extending due south to the CFBC. This modification in the site layout prevents additional fragmentation of a large, contiguous wetland system.

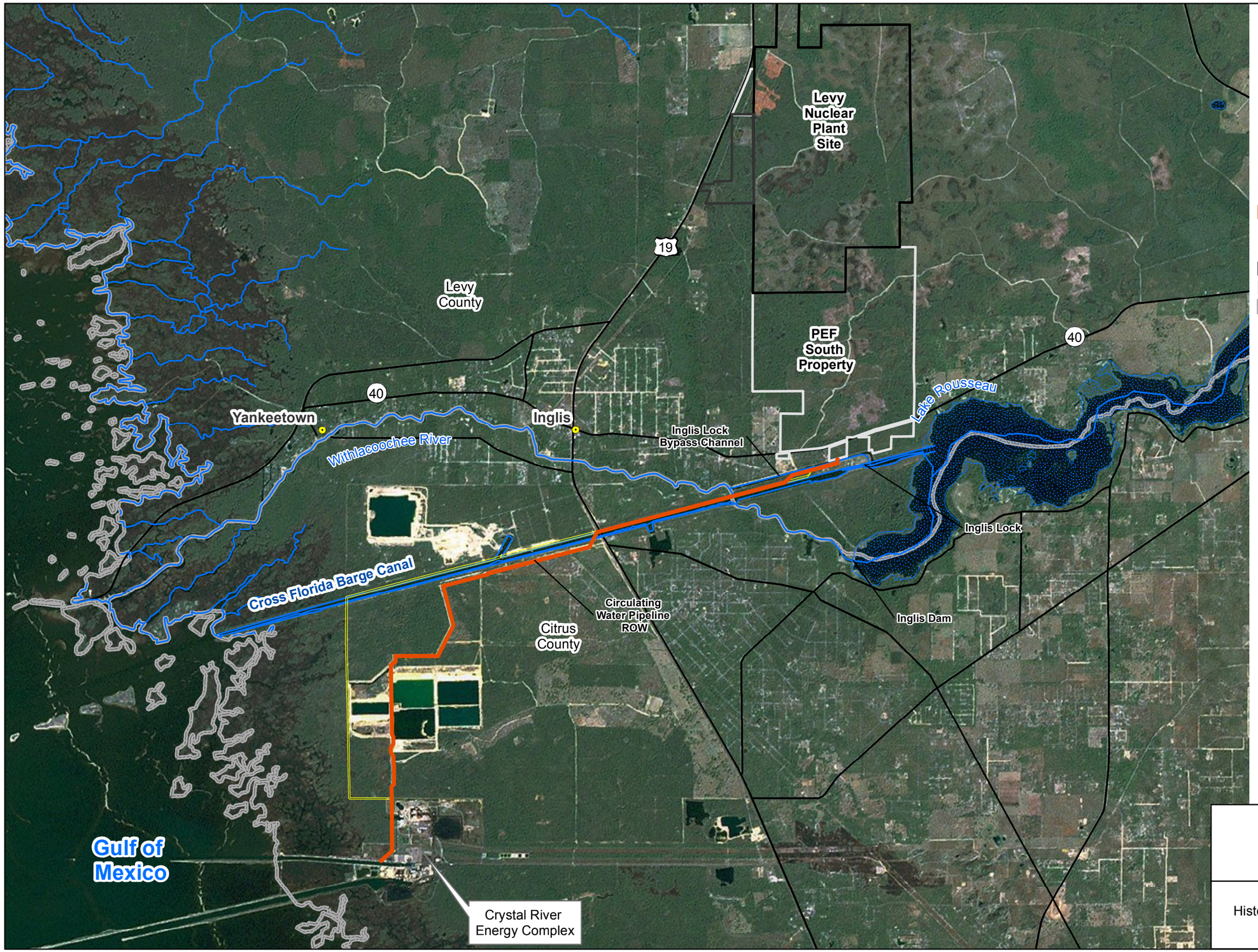
A railroad spur extending from the LNP site to Dunellon was originally proposed for transporting heavy equipment and components to the LNP site. Several alternative alignments for the railroad spur were evaluated and ranked based on estimates of potential wetland impacts using FLUCCS wetland mapping. In late 2008, PEF made the decision to eliminate the railroad spur from LNP plans, thereby avoiding impacts to 40 to 60 acres of wetlands. Heavy equipment and components would instead be transported to the LNP site by barge and by truck. A barge slip access road would connect the barge slip on the CFBC to the heavy haul road, which would be widened and reinforced to accommodate the additional load. The heavy haul road would enter the site from the south and connect to CR Since the four 500-kV transmission lines leaving the LNP site are collocated, and for a portion of the distance the 69-kV transmission line serving the south substation is also collocated in this ROW, PEF was also able to develop one larger structure pad that could accommodate all four lines for a 1.65-acre area of input for tangent structures and 4.26 acres for angle structures (one at the LNP site). This reduced the area of impact for structure pads. The structure pad spacing was adjusted to reduce impacts to these wetlands.

Site access roads were also reconfigured to minimize wetland impacts.The main access road and the road to the meteorological tower were angled to avoid wetlands where possible. Additionally, ROWs for the access roads were reduced.

Significant modifications were made to the blowdown pipeline ROW to avoid and minimize wetland impacts. After the CREC discharge canal was selected as the blowdown discharge site, candidate blowdown pipeline routes were identified that would maximize the use of reasonably accessible existing corridors and ROWs. Each blowdown route alternative was reviewed based on human use impacts, environmental impacts, and constructability. The human use impacts reviewed included the proximity to municipal/private water supply, potential impacts to fisheries and impacts to water-related recreation, parks, and preserves. The environmental effects considered were impacts to threatened and endangered species, aquatic habitats, and special aquatic sites (sanctuaries and refuges, wetlands, mudflats, vegetated shallows, coral reefs, and riffle and pool complexes). Constructability impacts included the types of construction techniques and cost of construction, including easement costs. PEF also sought input on the route options from the regulatory agencies, land owners, and local governments.

TABLE 4-2
Avoidance and Minimization for the LNP Linear Facilities

Facility or Activity	Avoidance and Minimization Measure	Location (if applicable)
Transmission lines, heavy haul road, and blowdown and makeup pipelines	Facilities were collocated to reduce impacts, and corridor was shifted to the east to avoid an eagle's nest and a higher quality cypress wetland.	See Figure 2-2
Main access road	The access road is curved to minimize potential impacts to wetlands.	See Figure 4-6
North access road	A new entrance road from State Road 19 (SR 19) into the LNP site was required. New north entrance road is configured to avoid wetlands and mature live oak trees.	See Figure 4-2
Site access roads	ROWs reduced from 200 feet to 160 feet.	See Figure 4-1
Meteorological tower access road	Road was relocated to reduce impacts to wetlands.	See Figure 4-6
Raw water pipeline	Pipeline realigned to avoid impacts to wetlands.	
Barge slip access road	Road relocated to the east to avoid impacts to small cypress wetland.	
Blowdown pipeline	Pipeline is routed through an upland spoils areas created from the excavation of the CFBC, and south through an active mining area. The routing maximizes use of previously disturbed area and reduces impacts to wetlands.	See Figure 4-10
Blowdown pipeline	Blowdown pipeline ROW relocated east to avoid impacts to estuarine emergent marsh.	See Figure 4-10
Blowdown pipelines	Pipelines sited on the periphery of wetlands (adjacent to access road) to minimize habitat fragmentation.	See Figure 4-10



N
W E
S

LEGEND

- Municipality
- Road
- Waterway
- Lake and Pond
- Current Offsite Blowdown Pipeline ROW
- Historical Offsite Blowdown Pipeline ROW
- LNP Site
- PEF South Property
- County Boundary

Sources

Municipalities: FGDL 2004
Roads: FGDL 2009
Waterways: FGDL 2009
County Boundary: FGDL 2001
Imagery: ESRI 2009

0 1 2
Kilometers

0 1 2
Miles

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Units 1 and 2
TMEM 132
Avoidance and Minimization

Historical and Current Blowdown Pipeline

FIGURE 4-10

Several alternative routes were developed and studied. One alternate route segment involved entering the CFBC due south of the LNP site and following the CFBC west with the pipeline submerged and entrenched along the north toe of the CFBC. It was determined that entrenching the pipe in the CFBC may have potential negative impacts to the man-made aquatic habitat of the CFBC and potential construction impacts on water quality. Therefore, submersion and entrenching the pipeline along the CFBC was not considered further for any of the route alternatives between the LNP site and CREC.

The original blowdown pipeline ROW extended along an existing transmission ROW. This portion of the blowdown pipeline ROW was later relocated to the east to avoid impacts to 4.5 acres of estuarine emergent marsh (see Figure 4-10). Use of previously disturbed area is maximized by siting the blowdown pipeline through an upland spoils area created from the original excavation of the CFBC, and then through an active mining area (CH2M HILL, 2010). Environmental surveys were conducted on two alternate pipeline ROWs located east of the original ROW. The selected alternative avoids a cypress slough and forest lands.

In the original Section 404 permit application the plan was to develop the western portion of the 1,000-foot-wide transmission line ROW, which would have left an undeveloped portion of the ROW between the developed portion and the heavy haul road/pipeline ROWs. PEF reviewed the original application in 2009 as part of the avoidance and minimization process. A determination was made that the development of the transmission ROW would shift from the western portion to the eastern portion of the ROW adjacent to the heavy haul road/ pipeline ROW. This reduces the need for a large connection road to be built from the heavy haul road to the transmission structure pads.

4.2.2 Avoidance and Minimization Measures During Construction

Corridor preparation work or construction activities along the linear facilities will include mowing, removing woody vegetation, temporary disturbances along access routes for construction equipment, and digging small excavations for the transmission tower and pipeline/structure base pads. Where construction or equipment traffic exposes soil, appropriate erosion control and revegetation methods will be applied.

Dewatering will be required to keep the trench dry during installation of the LNP pipelines. Dewatering for the makeup and blowdown pipelines will take place in 400 to 500-foot segments, reducing the area that is dewatered at any one time. To further minimize potential effects on wetlands from dewatering, infiltration trenches or similar, BMPs will be used as appropriate to recharge the area during the dewatering period. Refer to TMEM 338884-131, entitled *Effects of Temporary Dewatering for Construction of the Levy Nuclear Plant, Levy County, Florida* (CH2M HILL, 2011) for additional discussion of construction dewatering and wetlands. Alternative blowdown pipeline construction methods are discussed in the PEF response (RAI L-0960) to a USACE request concerning this issue (Corps Position Letter USACE-SAJ-2008-00490 [IP-GAH]).

On areas of the LNP site and associated facilities, including transmission corridors, where temporary impacts will occur, PEF will analyze the potentially impacted habitats and develop BMPs to minimize impacts to terrestrial, wetland, and wildlife resources. These BMPs could include the use of sedimentation and erosion control measures to limit erosion areas and using temporary silt fencing or hay bales as energy dissipators in the roadway ditches during construction. These same, or similar, sediment and erosion control measures

can be used to limit vehicle access into sensitive areas (for example, wildlife habitat or wetland areas). PEF may also limit construction activities to non-nesting seasons for certain wildlife species, or if construction must occur during these periods, monitor the nesting wildlife and reduce the duration of the construction.

5.0 Summary and Conclusion

The Section 404 and ERP sequencing processes require permit applicants to first avoid, then minimize the impacts to the extent possible. PEF has implemented a systematic wetland impact avoidance and minimization process beginning with site selection and continuing throughout the LNP project planning and design.

Access to a reliable source of water for cooling is a critical consideration in power plant siting. The LNP site is uniquely positioned in its proximity to an abundant and low-quality source of water in the CFBC. Use of water from the CFBC greatly diminishes the environmental impacts that would otherwise result from reservoir construction or high volume groundwater withdrawals. Additionally, the proximity of the CREC to the LNP site means that facilities such as the blowdown discharge structure and transmission lines can be collocated with existing features, thereby reducing potential environmental impacts.

The LNP site and layout were developed to the exacting standards in the DCD, which were established to ensure the safety and reliability of the nuclear generating facility. These design criteria impose constraints in facility siting. These constraints affect wetland impact avoidance and minimization efforts, but do not obviate the sequencing requirements under Section 404 of the CWA or under FDEP.

Key elements of the avoidance and minimization process included identifying and characterizing wetland resources early in the design process to use in facility siting and configuration, conducting alternatives analyses for project components using environmental criteria, maximizing the use of previously disturbed and lower quality areas for siting project components, and reviewing and modifying design plans as additional wetland avoidance opportunities are identified.

Upland and wetland communities form a complex mosaic on the LNP site, and some wetland impacts are unavoidable. Temporary impact areas will be restored following construction, and PEF will implement a comprehensive wetland mitigation plan as the third and final step in sequencing. Through a robust avoidance and minimization process, the resulting LNP site design meets the intent of the Section 404 and Florida ERP regulations.

6.0 References

Biological Research Associates (BRA). 2009. Wetland Mitigation Plan for the Progress Energy Levy Nuclear Plant and Associated Transmission Lines. Prepared for Progress Energy Florida for submittal to Florida Department of Environmental Protection.

CH2M HILL. 2009. Technical Memorandum 338884-TMEM-102: *Levy Nuclear Units 1 and 2 (LNP) Section 404(b)(1) Alternatives Analysis*. Prepared for Progress Energy Florida, Inc. Revision 0.

CH2M HILL. 2010. Technical Memorandum 338884-TMEM-125: *Environmental Review of Preferred Cooling Tower Blowdown Pipeline Route*, Levy Nuclear Plant Unit, Levy County, Florida.

CH2M HILL. 2011. Technical Memorandum 338884-TMEM-131: Effects of Temporary Dewatering for Construction of the Levy Nuclear Plant, Levy County, Florida. Prepared for Progress Energy Florida, Inc. Revision 1.

Florida Department of Environmental Protection (FDEP). 2011. *Levy Nuclear Power Plant Units 1 & 2, Progress Energy Florida Conditions of Certification (COCs) Plant and Associated Facilities and Transmission Lines.* Certified August 26, 2009. Modified January 25, 2011.

Progress Energy Florida, Inc. (PEF). 2008a. *Levy Nuclear Plant Units 1 and 2, Site Certification Application for Power Plant and Associated Facilities for the State of Florida*.

Progress Energy Florida, Inc PEF). 2010. Final Safety Analysis Report (FSAR) REV2.

Sargent & Lundy. 2008. Conceptual Grading and Drainage, Progress Energy, Florida Levy Nuclear Plant, Units 1 & 2. Report No. LNG-000-XGR-001, REV A. January 14.

Southwest Florida Water Management District (SWFWMD). 2010. Environmental Resource Permit Applications within the SWFWMD, Basis of Review, Part B. Management and Storage of Surface Waters.

U.S. Army Corps of Engineers (USACE). June 23, 2011. Position Letter USACE-SAJ-2008-00490(IP-GAH).

Westinghouse Electric Company, LLC (Westinghouse). 2011. AP1000 Design Control Document (DCD), REV. 19.